

## VATLY NEWSLETTER

*“We must doubt when we study and have faith when we act. Our actions must be of one who thinks, our thoughts must be of one who acts.”*

*Ho Dac Dzi*

### CONTENT

This thirteenth issue of the **VATLY NEWSLETTER** starts, as usual, with some **NEWS FROM THE LABORATORY**. It is followed by an interview of **Dr PHAN HONG SON**, Head of the NAFOSTED foundation in charge of the evaluation of proposals requesting funds from the Ministry of Science and Technology. A few lines are then devoted to **Pr NGO BAO CHAU** who paid a visit to VATLY just before being awarded the Fields Medal. Next comes an article on **Pr HO DAC DZI**, the founding father of the modern Vietnamese university. Following tradition we close the issue with a **PHOTO ALBUM**.

### NEWS FROM THE LABORATORY

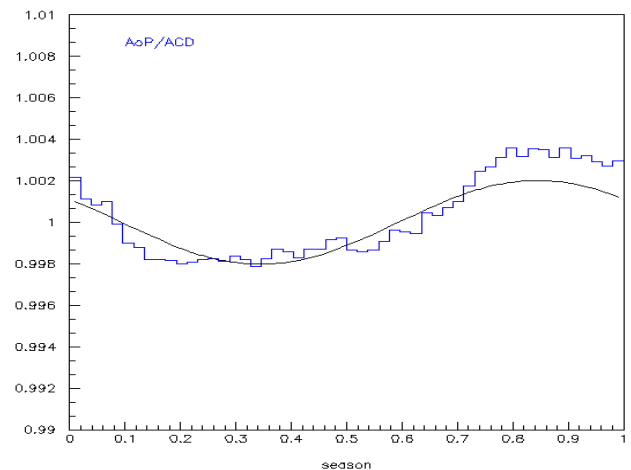
*Under this heading we review briefly the progress of the work of the team and the main events in its life.*

With two Master theses (Tuan Anh and The) and two PhD theses (Diep and Dong) to be defended before the end of the year, the past few months have been very busy. There was no time to relax.



*Dong and Phuong married in January*

At the beginning of the year, Dong, who married in January, came back from the Institut de Physique Nucléaire in Orsay, having been introduced by Isabelle Lhenry-Yvon and Piera Ghia to the analysis of monitoring data of the Cherenkov detectors of the Auger ground array. Together with Nhung, they spent the past few months working on such data and contributed important results to the detailed understanding of the detector. They have been summarized in two internal notes of the Auger Collaboration (so-called GAP notes), one on well-behaved detectors and one on detectors where one of the three photomultipliers has a response slightly different from that of the other two.



*Seasonal variations (permil level, over one year) of the width of muon signals in the Cherenkov detectors of the Auger array.*

Effects of a fraction of a percent have been studied, such as seasonal variations of the pulse shapes, and used to reach a deeper understanding of subtle optical and electronic phenomena affecting the behaviour of the detectors. While having no significant influence on the quality and the quantity of the physics data that are collected to study extreme energies, they are relevant to

occasional dysfunctions which have to be taken care of in situ. This is a somewhat demanding task because of the difficult access to some of the tanks, in particular during the winter months.

These studies will be continued next year. After having defended his thesis, on December 15th in Orsay, Dong will pay a visit to the Grenoble Auger team who have been working on such dysfunctions and have gained much expertise in their diagnosis. Following a suggestion by Pierre Billoir, part of the analyses performed by Dong and Nhung have been made on data from tanks that happen to accidentally coincide in time with a shower trigger.

Following on Dong, Diep spent three months in Orsay at the Laboratoire de l'Accélérateur Linéaire with the team of Marcel Urban. Both Dong's and Diep's theses are made under what is called a "cotutelle" agreement, meaning joint supervision between Hanoi and Orsay. These stays abroad are not only opportunities to learn new methods but also an enriching opening to a new working environment and a chance to make new friends within the Pierre Auger Collaboration.



*Diep and Marcel Urban at the Collaboration dinner in Malargüe*

The French supervisors, Tiina Suomijärvi and Alain Cordier, have done their utmost to make Dong's and Diep's stays pleasant and profitable and to find for them a most welcome financial support. As Diep's stay was coincident with a Collaboration meeting in Malargüe, he had a chance to attend it and to present his work on the identification of cosmic ray primaries from the ground density of muons. While in Orsay, Diep

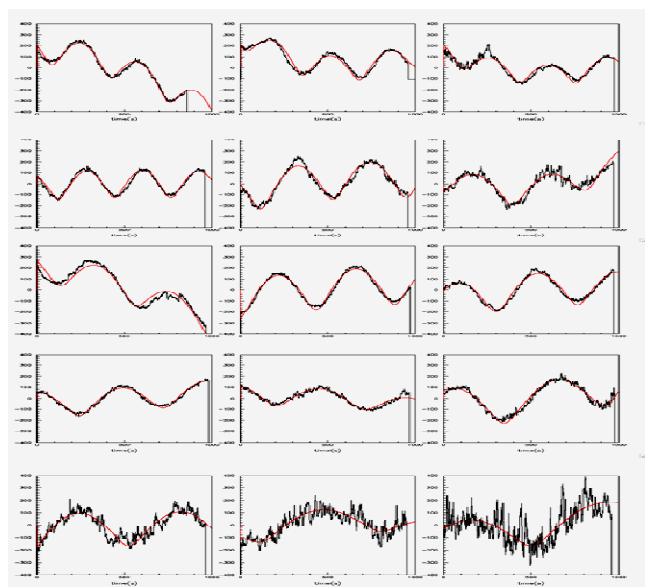
worked together with Karim Louedec, a PhD student in the LAL group, on the identification of cosmic rays having nearby galaxies as counterparts, in particular Cen A. The results have been published in two GAP notes. Diep was back in Hanoi by mid May and, together with Hoai, has been working since then on an ambitious project: the writing of a shower development code meant to be more flexible and transparent than conventional codes while still being close enough to physics reality. Mismatches between measurements of the muon density on ground and the predictions of conventional codes motivated this initiative. The program is now "running" but a running-in phase will be necessary to gain full confidence in its performance and it will not be possible to exploit it in time for results to be included in Diep's thesis.

Nhung is now a doctor. This entitled her to represent our team both toward the Institute and toward the Pierre Auger Collaboration. She took over these responsibilities from Dr Vo Van Thuan who was close to VATLY in the early years of its existence but who had become more and more distant with time. We take this opportunity to acknowledge the support he has given to the team and to express to him our deep gratitude. One of the first tasks of Nhung in her new position has been to produce the 2011 budget request for submission to NAFOSTED, the organization in charge of the assessment of such requests for the Ministry of Science and Technology (see interview of Dr Son, at the head of this organization, in the present issue). It had been Nhung's intention to work on shower divergences, in the wake of studies that she had made for her thesis, but the work with Dong, mentioned above, and guidance and help she gave to The and Tuan Anh for their master theses, have kept her fully busy. She will now leave for Malargüe where she will spend a month, taking shifts and attending the Collaboration meeting where she will present the work she did together with Dong.

Thao has kept working on the VATLY Cherenkov detector for her thesis, taking calibration data and detecting electrons from the decay of muons stopping in the water volume, in delayed coincidence with the muon signal. She met problems resulting from the high level of humidity in Hanoi but, after having inserted

silicagel in each of the three photomultiplier bases, the Cherenkov detector has been running smoothly. Her work is progressing well. She will present an overview of the research made at VATLY on the occasion of the Vietnamese Physical Society meeting that will be held in Hanoi next November.

Tuan Anh has now completed his master thesis which he brilliantly defended at the beginning of October. He submitted an abstract to present the main results at the meeting of the Vietnamese Physical Society in November. We recall the context: sixteen years ago, on the occasion of a total solar eclipse that could be observed from Phan Thiet in the south of Vietnam, Professor Nguyen Quang Rieu, a radio astronomer in Paris, had brought with him a radio interferometer including two Yagi antennas operated at 610 MHz and the associated detection electronics. He left it in Vietnam as a gift in the hope that it could be used to train students. However, no one used it and it was kept in a cupboard for nearly fifteen years. We unearthed it and Tuan Anh refurbished it, upgraded it and made it work. He observed beautiful interference fringes and measured the solar flux  $4 \pm 4$  dB above the nominal emission of the quiet sun.



*Interference fringes measured by Tuan Anh from solar radio emission at 610 MHz*

He will now continue with us for his PhD, again under joint supervision (cotutelle) between Hanoi and the Observatoire Midi Pyrénées. He

will work on the analysis of millimetric data collected at the radio interferometer of Plateau de Bure.

This decision of opening VATLY to radio astronomy has not been taken lightly. The case for radio astronomy in Vietnam is quite strong and Nguyen Quang Rieu has been pleading in its favour for many years without being much heard: the cloud cover of the tropical sky prevents making observations in the visible; Vietnam wants to acquire skills in space technology and has recently created a space institute with which we have good contacts; Dinh Van Trung, a former student of Nguyen Quang Rieu, has now returned to Vietnam after a decade of research in radio astronomy in Taipei: he gives astrophysics lectures at the University of Education which we follow and we have established with him close contacts. Before we took the decision, Pierre met Nguyen Van Hieu, who had been at the head of Vietnamese science for decades, to take his advice: he obtained from him very strong encouragement and support.



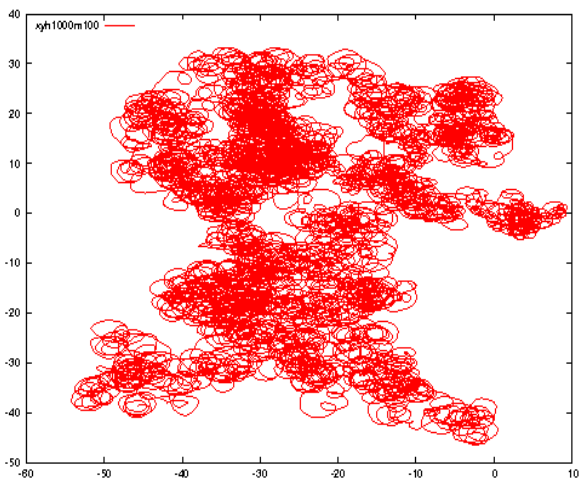
*Bac Pierre with Tuan Anh after the defence of his master thesis.*

We also decided to acquire a small radio telescope equipped for the detection of the 21 cm line: it will help us getting familiar with radio astronomy techniques and will give an opportunity to Tuan Anh and Hiep to observe hydrogen in the Galaxy, measure its rotation and observe its arm structure, follow the solar activity (the sun is now starting to wake up after a long quiet period) and observe other strong radio sources of the Vietnamese sky. We sent a short



mail reviewing these arguments to our astronomer friends who happen to have crossed our path and have given us help and support.

Doan Thi The is now completing her Master thesis which she will defend very soon. The subject is a study of diffusive shock acceleration in the shells of young supernova remnants. In addition to becoming familiar with the subject she wrote a simple simulation of the acceleration mechanism, showing the need for fluctuations as provided by turbulences in real shocks. Her study shows that, to be efficient, such turbulences must be strong enough in comparison with a possible uniform field component and the distances between them should exceed the Larmor radius of the particle being accelerated. While rudimentary, her model is very useful to better understand a phenomenon which is otherwise rather difficult to grasp. In July, she went to Osaka where she followed a Summer school on experimental nuclear physics after having been selected and having received a fellowship from Japan. After her thesis, she will return to teaching which her real vocation is. We will miss her and we wish her much success and happiness in her new job.



Trajectories (calculated by The) of a proton bouncing on turbulences near the front of a young Super Nova Remnant.

Hoai, who had made her graduation dissertation with us on the three body problem and the role of capture in the formation of X-ray active binaries, joined our team for her Master thesis. She works with Diep on the shower development program and has become an expert of all its

features, whether technical or physics related. She will defend her thesis in the autumn of next year and, by then, Diep and her should have obtained interesting results. In December she will go to India to follow the courses of the Corsika school (Corsika is the name of a frame in which conventional shower development codes are operated) and further increase her skills in this domain. In September, together with Hiep, she was awarded an Odon Vallet fellowship for young master and PhD students on the occasion of a ceremony held in Van Mieu. This was an opportunity for Pierre and for them to meet Tran Thanh Van and his wife who had come to Hanoi for a short visit on this occasion.

Hiep was awarded in August the Prize for the highest graduation marks in the whole country. For his dissertation, he studied a possible relation between global warming and cosmic rays and produced an excellent summary of current knowledge. As is well known, there is strong evidence for both global warming and increase of CO<sub>2</sub> concentration in the earth atmosphere during the past century. Much less strong, however, is the evidence that the former is the consequence of the latter. In particular, the role played by solar activity on the earth climate may be quite important and the possibility that it is mediated by cosmic rays is real.



Hiep defending his graduation dissertation on Global Warming and Cosmic Rays.

The idea is that solar activity modulates the magnetic field in the solar system, and therefore the cosmic ray flux on earth, and that cosmic rays being the main ionizing agent in the

earth atmosphere have an influence on cloud formation, which, in turn, acts on climate. Discussions on such issues have become less and less rational with time and have led to unpleasant controversial debates with melodramatic events such as what is now called the Climategate in reference to the Watergate. The truth is that our knowledge of the climate and of what causes its long term variations is still rather poor, but this cannot satisfy the politicians and industrialists who have to decide on our future and exert a strong pressure on scientists to do more than confessing their ignorance. Hiep gave a seminar on the subject at the Institute and submitted an abstract to repeat it at the Vietnamese Physical Society meeting in November. He also wrote a brief summary article for Tia Sang, the journal of the Ministry of Science and Technology. At the end of July, Hiep followed the lectures of the Summer School in High Energy Physics that was held in the Institute of Physics in Hanoi. In September, as was already mentioned, he was awarded, together with Hoai, an Odon Vallet fellowship.



*Pierre with Hiep and Hoai after they had been awarded their Odon Vallet fellowship.*

He has been working on the construction of a diffusion cloud chamber, using a conventional evaporation refrigerator unit. He soon realized that the temperature could not be sufficiently lowered and is now using Peltier elements to do the job with the help of Thieu. He will make his master thesis, together with Tuan Anh, on the small radio telescope that we shall receive in April. Both are now getting prepared to the event by reading the relevant literature.

We enjoyed the visit of several colleagues and friends. That of Ngo Bao Chau is reported below. Pierre Sebban, rector of the University of Science and Technology of Hanoi (USTH, see preceding issue) paid a visit to the laboratory together with Nguyen Ai Viet, former Head of the Institute of Physics. Pressure has been exerted by Vietnam to hold the opening ceremony of USTH in October, on the occasion of the millennium anniversary of the city of Hanoi. The courses of academic year 2010-2011 will be given in the premises of the Vietnam Academy of Science and Technology, on the other side of the street. Pierre will give some introductory lectures. We will keep very close contacts with USTH, in particular with the Department of Aeronautics and Space, with the idea that our association with it should benefit both parties. In particular, this association will give us an opportunity to obtain a fellowship for Tuan Anh PhD thesis. Another short visit was of Patrick Aurenche who passed by Hanoi in relation with the signature of the LIA (Laboratoire International Associé) agreement between Vietnam and the French CNRS. This agreement is very useful in giving us support on the occasion of our stays in France and we are very fortunate to have Patrick being well aware of what we are doing and giving us his support. We also had the visit of a Vietnamese physicist, Tiem, who left the country when he was very young and went to France where he grew up. He has been defending recently his PhD thesis in Lyon on OPERA, the Gran Sasso experiment meant to observe  $\nu_{\mu}-\nu_{\tau}$  oscillations from a CERN neutrino beam. He would like to come to Vietnam to teach students. We showed him around and spent a few hours with him before inviting him for lunch.



*Ngo Bao Chau visiting VATLY. From left to right: Tuan Anh, Diep, Hoai, Nhung and Pierre.*

Dr Dinh Van Trung paid a visit to the lab in September. We had already contacted him on several occasions in his laboratory of the Institute of Physics to get advice and guidance in relation with Tuan Anh master thesis. He has been working in Taiwan for many years and has a solid expertise in radio astronomy: his presence close to us is an important asset. While taking part in analyses of data from the VLA and other major radio astronomy installations, he is also training students for their PhD using a LIDAR to scan through the atmosphere. We asked for his support and guidance in relation with the future research work of Tuan Anh and Hiep, which he said he will be happy to offer.

We should not forget the LHC school which was held in Ho Chi Minh City this year. Hoai attended and Pierre gave a lecture. Finally, we attended a seminar in the Microtron building, on the other side of the street, which depends from the Nuclear Physics Department of the Institute of Physics and at the head of which Le Hong Khiem has just been appointed. We wish him all the best in his new position.

#### **INTERVIEW OF DR PHAN HONG SON**

*Last year, for the first time, a new foundation was established in Vietnam with the task of assessing research proposals and allocate them funds. If we were to name the main progress achieved in the management of Vietnamese science in the past ten years, this is most likely the initiative that we would retain. The Head of the Foundation, Dr Phan Hong Son, has a clear vision of the future, a sound judgement of what Vietnamese science needs in order to progress and a strong determination to give Vietnamese research the healthy environment which has been lacking in the past. Thanks to his dynamism, he has promptly gained the sympathy and support of the whole scientific community. He kindly accepted to answer the questions that Diep and Nhung went to ask him. We take this opportunity to express our gratitude for the time he gave them.*

**VATLY:** Can you briefly tell us about the history of NAFOSTED?

**Phan Hong Son:** The history of the Foundation is quite an interesting story. Though it started to

function last year (2009) it had been established in 2003 already. Many reasons caused this five year delay. One reason was that it was a new model for Vietnam. Before, science was funded directly through the ministries, Ministry of Science and Technology, Ministry of Education and Training, Ministry of Agriculture, Ministry of Industry and Trade... Government funds were transiting through ministries before reaching scientists. A consequence was that a given ministry could only fund scientists for whom it was responsible. In 2003, after having studied the funding systems in force in other countries, it was realized that an independent and neutral organization dispatching research funds directly all over the country would do a better job. The Ministry of Science and Technology proposed to the Government to create such a Foundation and a decree (122/2003 NĐCP) was immediately issued to establish NAFOSTED and simultaneously promulgate regulations for its operation and organization. However, its application raised new problems of incompatibility with existing regulations. It was simply impossible to operate while adhering to all of these. Therefore, it took us a year to produce new regulations and to explain to the Ministry of Finance and to the Ministry of Science and Technology why we had to do so.



*Phan Hong Son in his office after the interview.*

In addition, there were problems of logistic that had to be solved: in which premises should the Foundation be hosted? Who should manage it? Where from should the staff be hired? It was not simple; we had to start from scratch. At the same time, it was an opportunity for us to correct the shortcomings of the former system and to learn from the experience of other countries.



Everything was new and had to be created from scratch, it was a real challenge.

**VATLY:** What are the main roles and goals of NAFOSTED?

**Phan Hong Son:** On a short range, the Foundation has two main goals: the establishment of a healthy scientific environment in the country, and the creation of favourable conditions for scientists to pursue their research in a lasting, continuous and sustainable way. The conditions under which Vietnamese scientists had to do research were very difficult: it was hard for them to obtain funds and, in case of success, there was no guarantee that funding would continue the year after, there was essentially no follow-up. The Foundation is now an opportunity, for talented and successful scientists, to have their research funded on a long range and to plan ahead. When I speak of a healthy scientific environment, I mean at level with international standards. It implies correcting the inadequacies of the former system. Today, many years after the revival of Vietnamese science, we are unable to state what its main contributions and outstanding achievements have been. We lack the transparent management of science that is in force in other countries, where there exist clear objectives in reference to which progress can be easily assessed. This is what NAFOSTED wants to accomplish, the creation of a favourable environment for scientists. The second objective is to improve the quality of Vietnamese research, to raise its level and to make it compatible with international standards. We have realized that several Vietnamese scientists, who are considered in the country as leading figures in their domain, have essentially never published anything. It has been a shock to us. We must demand that each project produces publications in respectable journals of international audience. In this sense, the coming in operation of the Foundation is a revolution in the progress of the management of Vietnamese science. It is seen as such by the scientific community.

**VATLY:** Which are the first results of NAFOSTED? And what is its impact on the scientific community in Vietnam?

**Phan Hong Son:** None of the projects funded by NAFOSTED has yet been completed: 2009 was the first year of operation. But in spite of its young age, the Foundation has already been the object of numerous positive comments from the scientific community. They see in it an opportunity to do real research, to be funded regardless of their age or position in the hierarchy, but on the only basis of their talents, of their skills and of their potential to produce good results. The approval of a project is made on purely objective grounds and scientists have confidence in the objectivity of the scientific council. Such a mode of operation is seen as a breakthrough in Vietnam and we receive many letters praising what has been accomplished in less than two years of existence.

**VATLY:** How did you select the members of NAFOSTED's scientific council?

**Phan Hong Son:** We cover both natural and social sciences which we divide in domains, each domain having its own evaluation committee. There are seven domains in natural sciences and each committee has between 11 and 13 members. The exclusive criterion to pre-select members was the quality of their scientific achievements during the past five years. In practice, we had set up a database of all scientists in each domain and selected a list of those having excellent scientific results. This list was made public to the scientific community and we invited nominations to be brought to our knowledge. We could this way identify the most prestigious scientists in the list from the recognition that they enjoyed from their peers and to establish the short list from which the final decision was taken.

**VATLY:** In each domain, the scientific community is not very large and people know each other quite well, which might well introduce some bias. How did you prevent this to happen?

**Phan Hong Son:** First, the pre-selection of excellent scientists was, to a large extent, a guarantee of seriousness and of integrity. Former scientific councils were not paying much attention to the scientific achievements of their members and, as a result, the assessment of projects was made on subjective grounds. We asked the

members of the scientific committees to assess the projects on pure scientific grounds, free of any subjective feelings, and to serve exclusively the interest of the country and of its science. We must make sure that they do not depart from such a line. In addition, the evaluation procedure is such that it makes it difficult to introduce biases. It follows a method in use abroad, each project being submitted to two independent experts before being handed over to the Scientific Council. The applicant does not know who the experts are. The experts assess the projects, both qualitatively and quantitatively, according to criteria that we give them. Their reports help the Council in taking the final decision.

**VATLY:** Do you include international experts in your Scientific Council, in order to improve the level of Vietnamese research?

**Phan Hong Son:** This is something that we really want to do. Last year, we tried to do so but we met some difficulties. It implied having a large database of international experts, which we did not have. What we have, is a list of some forty foreign experts. It is not enough for the 700 or so projects that we need to evaluate each year. We have set up a system that makes it easy for them to send us their evaluation electronically. Last year 20 reports were sent to us this way, but it is not much in comparison with the needs. The growth of the number of projects submitted to us, soon nearing a thousand, is a real problem. Last year, all computer science projects have been reviewed by international experts. It was of much help to the Scientific Council, making it easier to assess the projects and to evaluate our level on the international scene.

**VATLY:** Which difficulties do you meet? Which improvements do you need in the future?

**Phan Hong Son:** Today, we have a clear view of how we should develop and we do not anticipate major problems. Things are getting organised. Last year, we covered natural sciences exclusively but this year we cover social sciences as well. We are taking steps toward unblocking funds for young scientists to attend conferences or to spend some time abroad. We also give funds for

organising conferences at home. One difficulty must be mentioned: when we want to change something to the better, in particular in matters of budget and finance, we need to overcome existing rules that were stated long ago by the Ministries of Finance and of Science and Technology and that are no longer appropriate. But to be authorized to change a rule requires a lot of time. According to the decision of the Government, we are still part of the Ministry of Science and Technology. Therefore, while we are supposed to be independent, anything we do must transit through the Ministry, which complicates things; we must of course comply with existing rules concerning the use of public money; when we receive complaints from scientists denouncing the inadequacy of obsolete rules, we have to ask permission higher up to change the rules. However, we have good reasons to be optimistic because we enjoy much support from the scientists. We received mails from Vietnamese working abroad praising our action and stating that they are now prepared to consider coming back home. Such statements are for us a strong encouragement. Others say how much they appreciate that junior scientists are now treated on the same footing as seniors and have equal chances of being funded. Formerly, scientists holding high position in spite of mediocre achievements could run the show and keep the younger generation in their shadow. To us, all scientists have equal rights and may apply for funds.

**VATLY:** Bac Pierre told us that the cases he had to referee were very often bringing up questions of scientific policy: namely without knowing what the policy was in the domain concerned, he could only assess a project on its own merits, disregarding whether it fits or not in the scientific policy of the country. Hence the question: Can NAFOSTED give recommendations to the Government concerning improvements of the existing policy when it exists or guidelines for working out one when it does not?

**Phan Hong Son:** In Vietnam, it is common to lack clear guidelines. The Foundation is a funding agency and plays no role in the management of science which is the responsibility of the Minister.



It belongs to him to define the scientific policy. However, we may give him advice. In fact, your question points to a weakness of the Vietnamese policy making system, which finds it difficult to identify priorities. Priorities that are eventually mentioned are often so general that they cover nearly everything. One talks of “*jack fruit strategy*”, everything is vital and has top priority: informatics, biotechnology, mechanics, everything... I remember a member of the management of the Ministry who was working in a foreign organization having been asked at a conference the same question as yours: which are your priorities? what do you focus on? After having heard his answer, the man in the audience concluded: “*So, if I understand you well, everything is a priority.*” Indeed, a good manager should be able to identify priorities.

You must not forget that NAFOSTED handles only a small fraction of the national budget for sciences and technologies. Major funds are directly allocated and managed at ministerial level through so-called key programmes that are given high priority; such are the decoding of the rice genome and the development of new rice varieties for the Ministry of Agriculture and the establishment of nuclear power plants for the Ministry of Science and Technology... In such cases, the Government orders the ministries and institutions to carry out the necessary applied research. It is a top-down approach. On the contrary, the Foundation works bottom-up. Scientists from universities and research institutes submit proposals to us. Both approaches are complementary.

**VATLY:** Which action will you take if a project does not achieve what it was approved for?

**Phan Hong Son:** In such cases, those who had proposed the project will be penalised by not receiving support in the following year. One should not think of getting the money back: when funding a project, one has to accept the risk that it will fail. We require each project to produce publications in international journals, which was not necessary in the past. Our science is weak in comparison with other countries. With time, Vietnamese scientists had concentrated on how to get money more than on how to do good research.

This is now changing thanks to the pressure exerted by NAFOSTED. If I compare publications by Vietnamese scientists with those of scientists from neighbour countries, such as Thailand or Malaysia, we are far behind. I am convinced that Vietnamese scientists are as good as their foreign colleagues but our management of science does not give them a chance to blossom. Many of them went abroad to study but, when back home, they are unable to exploit the knowledge and the skills that they have acquired. They do not feel encouraged and motivated to initiate new research, they are not given the means to do it. The aim of the Foundation is to change such a state of affairs and to create a healthy scientific environment in which Vietnamese scientists may develop their research skills in the wake of past experience.

**VATLY:** Thank you so much for accepting the interview and spending time with us.

#### **VISIT TO VIETNAM OF NGO BAO CHAU**

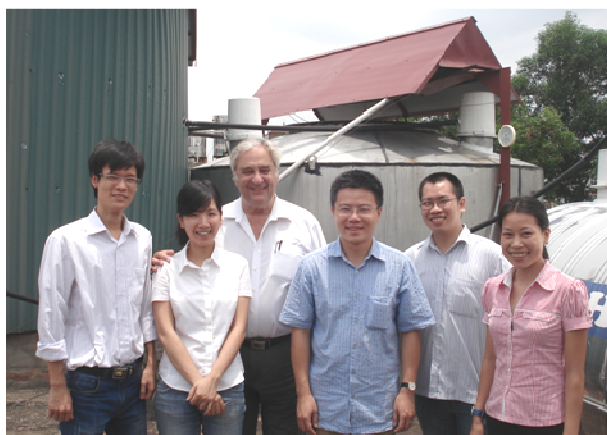
*In July, Pr Ngo Bao Chau, who was going to be awarded the Fields Medal shortly thereafter, came to Hanoi, his home town, where he spent a few weeks. As he had heard of us through friends and from articles on higher education and research that Pierre had written, he contacted us and we immediately invited him to visit the laboratory and to have lunch with us.*



*Ngo Bao Chau, Fields Medal 2010*

After having explained what we are doing and having shown him around, we went to our new meeting room and sat with him around the large table for two hours or so. We listened to him

explaining what the fundamental lemma was about, what his life had been when he was in Vietnam, what it was since he had left... It was a most memorable and enjoyable meeting, he was eager to listen to us, to learn about the difficulties we were meeting, about the message we would like him to convey to the Government... We were impressed by his generosity, his simplicity and how close to us we felt he was. We are deeply touched and grateful for having been honored by his visit.



*On the roof of the lab: from left to right, Tuan Anh, Nhung, Pierre, Ngo Bao Chau, Dong and Thao.*

Ngo Bao Chau was born in Hanoi in 1972, just before the December bombing of North Vietnam that marked the end of the US occupation. His father was a professor at the National Institute of Mechanics and his mother a medical doctor in a Hanoi hospital. He followed high school in Hanoi and was particularly brilliant, being awarded a gold medal at each of the International Mathematics Olympics in 1988 and 1989. He then went to study in Paris' Ecole Normale Supérieure with a scholarship of the French Government, obtained his PhD in 1997 from Orsay and joined the French CNRS where he stayed until 2005 when he was appointed Professor in Orsay. He recently accepted a position at the University of Chicago after a sabbatical at Princeton's Institute for Advanced Study. He is famous for his achievements in giving the proof of the fundamental lemma that establishes a bridge between number theory and group theory, first in collaboration with Laumon on unitary groups (2004), then, by himself (2008), for the general case. On August 19, 2010, he was

awarded the 2010 Fields Medal for this latter accomplishment.

The award had a huge mediatic impact in Vietnam and, on the occasion of his stay in Hanoi, a ceremony was hosted by the Prime Minister. He gave there a speech where he spoke about his young age, recalling the sacrifices which his parents had to endure in the very difficult after-war days for him to study in good conditions, expressing his gratitude to his Vietnamese high school teachers for their commitment, acknowledging the support he received from France in general and from his close collaborators in particular, praising the outstanding working conditions that prevail at Princeton. He closed his speech on expressing his respect and gratitude for the late Henri van Regemorter (see Newsletter 11) who hosted him in his house for the first ten years of his stay in France.



*Ngo Bao Chau receiving his award in India*

We copy below a few excerpts from his speech. We chose them for their broad scope. We strongly hope that the Government will not forget him and take his advice for making Vietnamese higher education and research leap forward.

*“For the first time a mathematician issued from a developing country has been awarded a Fields Medal. This event creates favourable conditions for a phase transition in Vietnamese mathematics in particular and in Vietnamese scientific research in general. This is what matters to me most. [...] Vietnamese families consider the studies of their children as something essential. But it seems to me that very few of them really love science and knowledge. [...] Solidarity within the scientific community is very precious. Vietnamese science has not yet reached*

*international recognition but we must show solidarity and rigour in assessing our academic weakness in order to have a chance to progress. [...] Having worked abroad, I have understood that a healthy working environment is crucial for young scientific talents to blossom. In such an environment, where academic rules and ethic have priority, everything becomes possible. Equality among scientists, independently from their age, and absolute freedom in their research, are equally vital. [...] From the example of Henri van Regemorter, I understood that the role of a scientist is not limited to his research work. He has also the duty to transfer his knowledge to the younger generation, whoever they are, wherever they come from, the duty to help them develop their potential not only in science but also in their life. This is what I wish to Vietnamese teachers and parents. [...] While the level of our country in matters of science and training is not as high as we would like, there are positive signs for significant improvement, in particular courageous decisions taken by the Government who have shown their determination to progress.”*

#### **HO DAC DZI (1900-1984)**

*The recent visit to Vietnam of Ngo Bao Chau on the occasion of his Fields Medal award triggered a movement of popular pride and rejoicing. A number of intellectuals and scholars took this opportunity to plead once again the case for better universities and research in Vietnam and to state that Vietnam should not wait for his children to get a Fields Medal or a Nobel Prize to recognize their talents. In particular it was argued that the analysis of the present situation and the identification of the points that need improvement have been repeatedly made by many, including prestigious Vietnamese such as General Giap and Professor Hoang Tuy. In a nutshell, what they tell us can be summarized in four sentences: we should stop saying white and doing black; we should restore dignity to intellectuals and scholars; we should have a clear plan for future research and education; we should stop the brain drain. What is needed now is action. Indeed, another prestigious Vietnamese scholar, Professor Ho Dac Dzi, had already put together the bases for a better university in the late forties.*

*He is not much remembered in Vietnam. The lines below tell us who he was.*

Professor Ho Dac Dzi was born in 1900 from a family of the Hue gentry. His father, a mandarin of high rank in the King's Court, had a degree in literature. He sent him to Hanoi to follow high school and, in 1918, at the end of World War I, to France. He got his bachelor degree in Bordeaux and moved to Paris where he studied to become a medical doctor. Dzi's French friends used to call him "Prince Ho Dac".



*Professor Ho Dac Dzi in Hanoi in the eighties.*

At that time, French medicine was one of the best in the world and Dzi was fortunate enough to be close to prestigious surgeons and practitioners such as Widal and Gernet who introduced him to the French intelligenzia. Together with the Japanese painter Fujita, he was known as a young talent who had come from the East. He was then very close to Eve Curie, the younger daughter of Pierre and Marie. They used to play the violin together and to discuss literature and poetry. For many years, Dzi kept on him a picture of her, lying down on a sofa and listening to his playing.

Dzi loved research and invented a new method of stomach operation which he presented in his doctoral thesis and which was then used by surgeons around the world for many years. Later on he remembered the twenties as one of the happiest period of his life. It was also during these years that he met politically active Vietnamese who were concerned by the colonial regime which



their country was enduring. In 1919, the future Ho Chi Minh presented eight claims for Vietnam to the Peace Conference held in preparation of the Treaty of Versailles. Dzi, who was only 19, got impressed by the man, ten years older than him, and admired his courage. Later on, he met him twice at the Student's Club and used to help selling *Le Paria*<sup>1</sup> in the street.



*In Paris with Vietnamese friends, 1925*

In 1931, Dzi was asked by his family to come back to Vietnam to get married. He liked the idea of coming back home and thought that he could help his country with the skill he had acquired in France during the past thirteen years. But he was promptly disenchanted. The French doctors in the Hue hospital used to treat their Vietnamese colleagues as their slaves. He thought of going back to France but his father insisted that he should stay and take care of his family. He then met Pr Leroy Des Barres, who was at the head of the Hanoi Faculty of Medicine and Pharmacy and who invited him to join Hospital Phu Doan in Hanoi as permanent surgeon and to teach at the University.

Between 1932 and 1938, Dzi worked very hard as a surgeon and as a teacher. In the years preceding the August revolution, the French regime was keeping the Vietnamese doctors in low positions, generating a deep feeling of injustice among the staff. Dzi wrote in his Memoirs: “I then started to worry about my

*feeling unhappy inside, in spite of an apparently normal life. Soon, however, my eyes opened and this vague feeling became a concrete reality: I was but the citizen of a conquered country.”*

Dzi's legacy during these Hanoi years include many publications, often in collaboration with prestigious foreign colleagues, and he was finally appointed professor shortly before the August Revolution.

It is difficult today to imagine under which conditions the Hanoi Faculty of Medicine and Pharmacy continued to work during the difficult years of resistance against the French, in particular from 1947 to 1950. Dzi and his younger colleague Ton That Tung had left Hanoi with wife and children and moved successively to Vân Dinh, Son Tay, Phu Tho and Tuyen Quang<sup>2</sup>. At the same time as they were performing urgent operations under very difficult conditions, they were training ten or so students who followed them from place to place. Dzi was in charge of partisans wounded on the Hanoi front. After two months, they had to retreat and leave Hanoi behind for the Viet Bac forests, sanctuary of Viet Minh resistance, near the Chinese border.

At the end of May 1947, Dzi and his students installed on a small hill, next to a creek, three premises: one for operations, one for first aid and one for laboratory analyses. Soon after, the new hospital was always full, students had no time to think back to Hanoi. They were fifteen to graduate in academic year 1946-1947; eight of them left for the front.

On October 6th, 1947, a solemn ceremony marked the opening of the new academic year. In the middle of the Viet Bac forest, in a bamboo shack, with the babble of the creek as background, Dzi gave a speech that he had written under the gleam of his oil-lamp. It was a declaration establishing the bases of the future Vietnam University. There were many scholars and scientists in the audience who welcomed it with warm applause.

It is remarkable that as early as 1947 Dzi had such a clear vision of higher education. “*University, he said, is not only a set of schools dispatching knowledge and techniques, but also a*

<sup>1</sup> Famous anti-colonial paper written and published by the future Ho Chi Minh in Paris during the twenties.

<sup>2</sup> Cities distant from Hanoi by 35 km, 50 km, 150 km and 80 km respectively.

research centre. In science, progress requires a close collaboration between both, without which one could only build on sand. [...] Teaching and research are twin brothers. The chair of the professor is the anteroom of the laboratory. University is not only the place where science is taught but also the place where it is given birth. [...] It is the task of teachers to identify young students having a taste for scientific research, to help them in developing their observation skills and critical mind, their curiosity, their desire to understand and their intuitive imagination. The better the teacher, the farther ahead of him his students will get. [...] Young people are passionate for scientific research and are often the authors of the most beautiful discoveries. [...] Academic mind, specific to higher education, is complicity between teacher and students based on trust and friendship, leaving no room for authoritative argumentation. Such an unconstrained relation is the only way for critical mind, the most beautiful flower of human mind, vital to science, to blossom in complete freedom.”



Picture taken in 1948 at a base of the Resistance against the French occupation, together with intellectual patriots ; from right to left : Dinh Van Thang, Ton That Tung, Ho Dac Dzi, Nguyen Van Huyen, Do Xuan Hop, Vu Van Can, Nguyen Chinh Co.

It does not come as a surprise that at such a school many of his students became creative scientists, such as Nguyen Huy Phan, Pham Khue, Dang Hong Van, Ha Van Mao and many others.



Pr Ho Dac Dzi, Head of the University of Medical Sciences, in the Viet Bac at the time of the Resistance against the French occupation.

The day after, on October 7th, the French launched an operation against Viet Bac. Dzi received an urgent letter from Ho Chi Minh asking him to warrant the survival of the School of Medicine, and to take care of the staff, the students and their families. The French set Dzi's hospital in flames and Ho Chi Minh asked him to move to a safe place at Tuyen Quang where they could meet. He told him that the school had to continue to function at any price, that it was vital for the Resistance. Dzi decided then to move the school near to the front, and promptly built bamboo shacks to shelter the new hospital. During the eight years of resistance against the French, the school had to move thirteen times. But it never stopped training new talents who devoted their lives to their country.

His vision of scientific progress was a sequence of explorations, sometimes convergent, sometimes opposed, but always heading forward toward truth. He used to insist on the importance of team work in scientific research, which, he said, “requires obstinate effort and patient work. One must be always on the look-out for a new discovery in order not to miss the opportunity that turns up. Chance and watchfulness must go hand in hand with work, imagination and method.”

He died in 1984. He used to say that “one must live with the ambition of a master and die with the humility of a disciple.”

So did he.

**NEXT YEAR, VATLY WILL BE TEN YEARS OLD  
ON THIS OCCASION, WE INTEND TO ISSUE A BOOKLET CELEBRATING THE EVENT  
FEEL FREE TO SEND US A FEW LINES OF ENCOURAGEMENT  
WE WILL INSERT THEM**

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– PHOTO ALBUM –



*Vietnamese women day celebration in the lab. From left to right: Diep, Pierre, Nhung, Hoai, Hiep, Thao, Tuan Anh, The and Dong.*



*At the Osaka school. The is standing, second from left.*



*Diep in Malargüe*



*Tiina Suomijärvi and Dong in Mendoza*



*Pierre and Daniel Froidevaux in Sai Gon during the LHC School.*



*Hiep receiving his award for the highest graduation marks nationwide.*



*After Tuan Anh's master thesis in front of the Institute of Physics. From left to right: Hiep, Nhung, Dong, The, Diep, Tuan Anh, Pierre, Hoai and Thieu.*



*Tuan Anh in Hoa Binh in front of one of the antennas of his interferometer (the other is visible in the background).*



*Khoi, the son of Diep, just celebrated his third birthday.*



*Marcel Urban in Malargüe*



*Phuong and Dong with Dong's parents at their wedding party.*



*Gaypride? No, Daniel Froidevaux and Pierre in Sai Gon at the entrance gate of their hotel where a wedding party had just taken place.*





*Dong and Phuong in Vietnamese traditional dress*



*In Van Mieu at the Odon Vallet ceremony. From left to right, Pierre, Tran Thanh Van, Hoai, Hiep and a friend of Hoai*



*After Tuan Anh's master thesis, in front of the Institute of Physics. From left to right: Diep, Hung, Dinh Van Trung (rapporteur), Dong, Nhung, Hoai, Pierre, Tuan Anh, Hoa, Thiep (chair of the panel), The, Khai (rapporteur) and Hiep.*